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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,319	09/26/2003	Martin W. Weiser	H0004362	5332
21567	7590	09/22/2006	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			NGUYEN, DILINH P	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 09/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/670,319

Applicant(s)

WEISER ET AL.

Examiner

DiLinh Nguyen

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2 and 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andricacos et al. (U.S. Pat. 6224690).

Andricacos et al. disclose a semiconductor package comprising a lead free solder ball comprising tin (Sn) as the predominate component and one or more alloying elements selected from Ag, Bi and further optionally including one or more elements selected from the group consisting of In and Cu (cover figs. and abstract).

Andricacos et al. do not disclose that the solder having an alpha flux of less than 0.001 cts/cm<sup>2</sup>/hr.

However, the solder of Andricacos et al. is substantially lead-free and wherein the solder predominately comprises Sn (abstract). The solder of Andricacos et al. is similar to the solder of the claimed invention. Therefore, the solder of Andricacos et al. would have an alpha flux of less than 0.001 cts/cm<sup>2</sup>/hr.

- Regarding claims 2 and 4, Andricacos et al. disclose that wherein the solder predominately comprises Sn (abstract).
- Regarding claim 5, Andricacos et al. disclose that wherein the solder is lead-free (abstract).

3. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schrock (U.S. Pat. 6221691).

Schrock discloses a semiconductor package comprising a die 10, a substrate 22, a solder predominately comprises Ag (a plurality of silver balls for improving heat transfer from the die 10) (column 2, lines 5-10).

Schrock does not disclose that the solder having an alpha flux of less than 0.001 cts/cm<sup>2</sup>/hr.

However, the solder of Schrock is similar to the solder of the claimed invention (a solder predominately comprises Ag). Therefore, the solder of Schrock would have an alpha flux of less than 0.001 cts/cm<sup>2</sup>/hr.

4. Claims 1 and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara (U.S. Pat. 6433390).

Hara discloses a semiconductor package comprising the solder is lead containing solder that is at least 99 weight % lead (a Pb [lead] bump 908) (fig. 10A, column 14, line 30).

Hara does not disclose that the lead-containing solder has an alpha flux of less than 0.005 cts/cm<sup>2</sup>/hr, 0.0002 cts/cm<sup>2</sup>/hr or 0.0001 cts/cm<sup>2</sup>/hr.

However, the lead-containing solder of Hara is similar to the solder of the claimed invention (the solder is lead containing solder that is at least 99 weight % lead (a Pb [lead] bump 908) (fig. 10A, column 14, line 30)). Therefore, the lead-containing solder of Hara et al. would have an alpha flux of less than 0.005 cts/cm<sup>2</sup>/hr, 0.0002 cts/cm<sup>2</sup>/hr or 0.0001 cts/cm<sup>2</sup>/hr.

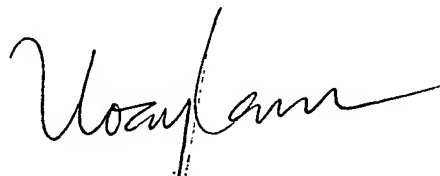
***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DiLinh Nguyen whose telephone number is (571) 272-1712. The examiner can normally be reached on 8:00AM - 6:00PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DLN

  
HOA PHAM  
PRIMARY EXAMINER